

ARBOR and BIRD DAY

MASSACHUSETTS FORESTRY ASSOCIATION
MASSACHUSETTS AUDUBON SOCIETY



SCREECH OWL

Plate by courtesy of the National
Association of Audubon Societies



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SOME USES OF WOOD IN THE WAR

Millions of feet of lumber are used in building ships to carry our soldiers, supplies and ammunition.

It is used for homes for the ship builders and houses for the soldiers in cantonments.

Charcoal used in making gunpowder comes from wood. The charcoal for this purpose is made mainly from dogwood, willow and alder.

Wood alcohol used in large quantities for heating and manufacturing ammunition is made from wood.

The stocks of guns are made from wood. Black walnut is the best wood for gun stocks, but birch is used to some extent.

Bridges are built of wood to replace those destroyed by the enemy.

Millions of railroad ties must be used in building railroads that carry supplies to the soldiers in the trenches.

Huge quantities of lumber must be used in constructing the trenches and dug-outs to protect the soldiers.

Wood is used for fuel by the armies and here at home where coal cannot be had.

About two hundred feet of the choicest lumber is used in making an airplane, and nearly ten thousand feet of standing timber must be cut to obtain enough of this perfect wood for one airplane.

Boxes made of wood must be used for packing food and munitions.

Long poles called piles are driven into the earth under the water to make wharves for the ships that carry our soldiers.

Wood is used by some of the nations at war for making clothing. Paper shirts are worn by the Russian soldiers, and vests, socks and handkerchiefs made of paper are used in Germany.

Wood is used in making paper boxes for packing food, and also in making excelsior for packing other articles. The paper we use comes from wood.

Trees are used by all armies wherever they exist to screen the soldiers and cannon from the enemy.

Sugar and syrup is made from the sap of the maple tree.

Soft absorbent surgical cotton is made of wood cellulose. Slings are made from tough crepe paper and the splints used to hold broken bones in place are also made from fibre boards.

Resin, which comes from pine trees, is used to fill the space between the bullets in shrapnel shells. It is also used in making soap.

Turpentine, a product of southern pine trees, furnishes a kind of camphor used in army hospitals.

Cordage, ropes and burlap are now being made from paper

ARBOR AND BIRD DAY*

We are engaged in a life and death struggle with one of the strongest nations on earth. To lose would mean to give up our sacred rights to liberty for which our forefathers fought and died. But we shall not lose. Never shall king or kaiser dominate this land of the free. Everyone must and will do his part "to make the world safe for democracy."

But there are many serious problems before us. We must provide the necessities of war for ourselves and our allies. Food and wood are among these things that will decide this war, and the conservation of our forests and the birds, which protect our food, by destroying insects, is brought home to us with peculiar force at this time. Arbor and Bird Day this year takes on a new meaning which appeals, not only to our sense of preparedness for the future, but to our patriotism as well.

Our great forests which it has taken a hundred years or more to grow, are fast disappearing and the only way we can replace them is to begin to plant now. A glance at the opposite page will show that we must have wood to carry on the war. We use it in scores of ways every day. The time was when we thought our forests were of little value and would never become scarce, but today we are told by lumbermen and foresters, that we are using three times as much timber each year as we are growing. The number of people in the United States is constantly increasing and unless we soon begin to plant forest trees, we are sure to have a wood famine in this country as they once had in parts of Europe.

One of the chief reasons for protecting our forests is to be prepared for times like these, when the very life of our nation depends largely on our supply of wood. For hundreds of years Germany has been planting trees and protecting the forests so that today, one of its greatest sources of strength is its abundance of wood. Massachusetts this winter could not get enough coal to supply its needs and the cordwood from its forests kept many from suffering from cold. What would we have done, if we had not the forests to turn to for cordwood? Yet we are in a bad way as a state, because we have to bring in from other states two-thirds of the lumber we use.

At this time when our factories and ships are calling for coal to provide supplies needed by our soldiers in the trenches, we cannot save the forests from the axe. Every sacrifice must be made here at home, in order to supply those men who are giving their lives for us with everything that they need to fight the enemy. Every family should burn wood when it can be obtained, and nearly every farmer, as well as many people who live in the country and small towns, can get wood near at hand.

"Cut-a-Cord Clubs" should be formed in every town and many of these clubs have already begun to cut wood for fuel. It is good exercise and good fun as well, when a party goes into the woods, each one set on cutting at least a cord of wood. This is one way to do "your bit." Every town should have a wood yard where the wood can be cut into small sizes for home use.

A Plan to Produce Wood for Our Future Needs

Massachusetts has about 3,700,000 people. We use about 375 feet of lumber per person annually. To supply this need we should have each year at least 20,000 acres of forest ready to cut. There is in Massachusetts about 1,000,000 acres of land that is either lying idle or producing very little timber and which is better suited to growing trees, than any other crop. It should be planted to useful trees. It takes 50 years to grow pines to lumber size, and if we planted 20,000 acres each year it would require just 50 years to plant this 1,000,000 acres of idle land. From that time on we would have all

*Last year a law was passed providing that the Governor shall annually issue a proclamation setting apart the last Saturday in April as Arbor and Bird Day and recommending that the Friday preceding be observed in the rural and suburban schools of the Commonwealth by exercises appropriate to Arbor and Bird Day.

the wood we would need and would not be dependent on other states or countries for our supply. But how can we do this great task? The answer is that the school children can do this planting by simply observing Arbor Day as they do in some of the old countries. In Sweden, for example, the school children are taken out to plant trees on the lands owned by their towns, and which are called town forests. This little country not only has timber for itself but for its neighbors also.

We have over 480,000 pupils in the public schools of Massachusetts on the side of the city of Boston. If each of these pupils were to plant 40 little trees every Arbor Day, or during the spring, this great task of planting 20,000 acres to trees each year would be done with ease. It would not only be a fine training for the children, but they would learn to know and love trees. This work would be of great educational value and besides the children would feel and know that they were doing something worth while. They would know that those trees were to be of use to them when they became men and women.

We do not need to go to foreign countries for examples to prove that this plan is practicable. It has been done in this country with success. The city of Reading, Pennsylvania, has a town forest on which thousands of little trees have been planted by the school children under the direction of the city forester and the teachers. In our own state the town of Walpole has a town forest of 150 acres and the school children planted the first acre of their town forest to little pine trees on Arbor Day two years ago.

In answer to those who might think that trees cannot be properly planted by children, it is fair to say that not more than one in 100 of the trees planted by the Walpole pupils died from improper planting. This plan of planting forest trees by school children is no longer an experiment and the teachers in all of the public schools, especially in the towns, should co-operate with the town officers in this work.

How to Do It

Almost every city and town owns some land that ought to be planted with trees. Most places have watersheds,—land set aside to protect the water supply. All these should be planted to useful trees. Other places have such land on the "poor farm" and some have woodland parks. There should be no difficulty in obtaining land to plant and if your town does not already have such land it should be bought under the law which permits towns and cities to own forests.

The teachers and superintendents can arrange with the forest warden or tree warden of the town to furnish the trees and the tools, or better still to have the holes dug for the trees as was done in Walpole. The teachers and pupils of one or two rooms can go out at one time to do planting so that the children can be given the necessary instruction, which is very simple. This would require each room or school to have an Arbor Day of its own. After the system was started the older pupils could teach the younger from year to year. Arbor Day would soon become one of the most pleasant events of the school year, to which the pupils and teachers would look forward.

Resolve to start this system in your school, and you will surely find the town officials willing to co-operate with you.

Let us have a town forest in every town and city of the state, so that we and those who follow us may always have wood. This is one form of preparedness which is just as important to the welfare of the nation as having a good army and navy.

BIRDS ARE HELPING TO WIN THE WAR

Birds have done much and will do more to help us win the war. The flight of birds suggested our only sure means of winning it. It was by studying how birds fly that American mechanics first invented the airplane, and it is the airplane chiefly that will win the war. The German defences are so mighty, vast and intricate that the war can be carried into Germany only through the

ir. Airplanes can bomb and blow up the trains bringing men, food and ammunition to the German front lines. Airmen can find and destroy the bases from which the submarines get their supplies. Airmen alone can spy out the enemy's defences and tell the batterymen where to shoot. If we can build and man enough airplanes and train enough airmen, we can so weaken the German army and the German navy that they will be powerless against our well-armed troops and ships.

The hearing of birds is so much better than ours that when the Germans first began to raid England, pheasants and other birds were disturbed by the noise of the German airships long before it could be heard by human ears, and by their cries the birds gave warning to the watchers to prepare to defend London. Birds are useful, if not indispensable, to the soldiers in the trenches. Canaries are kept in the trenches to give warning of the first approach of the poisoned gas used by the enemy.

During a battle the carrier pigeon is the surest means of sending messages from the front trenches to the batteries at the rear. All other communication may be destroyed by shellfire, or hidden by dust and smoke, but 95 per cent. of the notes fastened to pigeons are carried safely. Often the lives of many men depend on these pigeons.

A coast watcher on the west coast of Britain saw through his glass the top of a U-boat periscope out at sea, and then the conning tower, as the boat slipped quietly to its secret base for its store of petrol. He released a pigeon from his basket with a message to a British naval sub-base. The next morning the U-boat was lying beside a British destroyer and the German crew were all prisoners. Again, a British patrol boat was attacked and sunk by a submarine, but the captain had time to release a pigeon with a message before his vessel sank. The Germans shot the bird and wounded it, but, shattered and bleeding it managed to reach the deck of a destroyer 20 miles away and the crew of the patrol boat was saved. A seaplane in trouble at sea in stormy weather sent out a pigeon into the storm which managed to reach the shore against the fierce wind. It died of exhaustion when it reached home, but its message called help to the crew and all were rescued from the raging sea.

Many a submarine, which otherwise might have escaped notice, has been seen and destroyed by planes or destroyers because of a flock of sea gulls which kept it company. The gulls which follow steamers for the garbage thrown overboard learned to follow submarines for the same purpose. From their position high in air they can look down through the water and see the submarine moving along as a man in a balloon can see the bottom of a lake and the big fish in it as he goes over it, and so they flock after the submarine and guide the airmen and sailors to the pirate craft. A steamer from France was headed westward on her course across the Atlantic when the lookout saw three gulls roosting on something dead ahead. They were sitting on the arms of a mine floating just beneath the surface, the watcher saw them just in time to warn the helmsman, change the course and save the vessel from an explosion that might have sunk it in the sea.

Our success in the war depends not so much on our army as on food, sails, ships, airmen, airplanes and seaplanes. Food is the first great necessity. Every great, long-continued war has been ended or followed by famine. Men cannot fight long without food. This world war will be followed by a world famine unless enormous quantities of food can be produced. We have seen some of the ways in which birds can help us directly in the war, but there are ways more important in which they can help us indirectly. Winning the war depends more than anything else on our ability to grow crops out of the ground to furnish food to soldiers, sailors, airmen, to all the people, and to domestic animals which are used for our food.

Birds help us to produce this food. First, there are the hens, ducks, geese, turkeys, guinea hens and pigeons on a million farms that lay eggs and produce young to take the place of meat that must be sent to our soldiers, sailors and allies. When we have "meatless" days there are fowls, chickens and eggs which are used to take the place of beef, pork or mutton. Game birds and wild fowl are still plentiful enough in some parts of the country to furnish a considerable meat supply in the shooting season. Many years ago

our soldiers in the west were fed very largely on wild geese and the present supply might be much increased under sufficient protection.

But the greatest assistance we get from the birds in producing food is in the protection of crops and forests from insect and animal pests. Many birds eat insect pests which if allowed to live and increase might themselves eat all our vegetables, grasses, grain and trees, and leave no food for us.

Below is a list of insect pests and a few of the birds that eat them.

Insect.	Plants injured or destroyed by it	Birds eating it.
Gypsy moth and brown-tail moth.	Fruit, shade and forest trees	Cuckoos, robin, bluebird, jay, oriole, vireos and many others.
Codling moth	Parent of the apple worm which injures the fruit.	Woodpeckers, chickadees and others.
Tent caterpillar	An apple and cherry pest .	Cuckoos, jay, chickadee and many others.
Forest tent caterpillar .	Fruit, shade and forest trees	Cuckoos, warblers, waxwing, oriole and many others.
Webworms	Fruit, shade and forest trees	Cuckoos, jay, chickadee and many others.
Army worms	Grass, corn, etc.	Robin, sparrows, bluebird, black birds and many others.
Cutworms	Nearly all crops	Robins, catbird, bluebird, black birds, sparrows and many others.
Cankerworms and other geometrid caterpillars .	Injure fruit trees and other trees.	Nearly all birds of orchard or woodland.
Cabbage Worm	Cabbages	Song sparrow, chipping sparrow, towhee.
Beetworm	Beets	Chipping sparrow.
Colorado Potato beetle .	Destroys the potato and egg plant.	Bobwhite, yellow-billed cuckoo, rose-breasted grosbeak.
Elm-leaf beetle	Kills elms	Cedar waxwing, vireos, etc.
May beetles and their young, the white grub.	Grass and Gardeu plants .	Robin, blackbird, thrasher, catbird, towhee and others.
Rose beetle	Roses and other plants . .	Wood thrush, martin and others.
Cucumber beetle	Destroys cucumber and squash plants.	Oriole, martin, phoebe, night hawk, etc.
Weevils	Fruit, clover, grain, peas, beans, etc.	Eaten by very many birds, blue bird, oriole, downy wood pecker, etc.
Click beetles and wireworms.	Roots of many garden plants, grains and grasses.	Robin, sparrows, oriole, pheobe and many others.
Plant lice	Plant life generally . . .	Warblers, chickadee, sparrows, thrushes and others.
Bark lice	Fruit trees and other trees.	Nuthatches, chickadee, creepers.
Scale insects	Fruit trees and other trees.	Chickadee, grosbeak, etc.
Grasshoppers and locusts	Grass, grain and other crops	Practically all birds.
Crickets	Grass, grain, fruit, etc . .	Many ground birds.

When the Mormons first settled in Utah in the wilderness, a black grasshopper or cricket appeared in immense swarms, eating up their whole grain crop. The second year the crickets appeared again. Wheat fields which were untouched in the morning were by evening cleared of grain by these voracious insects. But great flocks of white gulls suddenly appeared and ate up the crickets, thus saving the remainder of the crop of wheat upon which the half-starved Mormons depended for food. A monument costing \$40,000 has been erected to the gulls in Salt Lake City by the grateful people.

The crop of grass in the fields and pastures is the greatest crop grown in the world. It is the chief food for our horses, cattle and sheep, and for the protection of this crop from its insect enemies we must depend upon the birds and other natural enemies of insects. There is no way in which we can protect it. We cannot spray with poisons the grass on which our cattle, horses and sheep feed, nor can we poison the grass that is made into hay.

Birds protect the trees as well as the grasses and grain. In 1895 I made an experiment in attracting birds into an orchard and protecting them there. The result was that mine was the only orchard in town that produced a crop of apples that year. Birds protect from insect pests the forest trees which we must have for lumber to build ships and airplanes.

The Baron von Berlepsch conducted experiments in attracting birds on his great estate in Thuringia, Germany, and so increased the number of birds that thousands were nesting in his woods. One season there came a great increase in caterpillars so that they destroyed all the foliage of the trees in all the region, but the birds on the Baron's estate ate up the caterpillars so that the trees there were in full leaf and the estate stood out green and flourishing amid the barren countryside like an oasis in a desert.

Rats and mice are always a danger to the food supply. It takes the labor of two hundred thousand men every day in the year to produce the food to feed the rats in this country. The greatest enemies of rats and mice are the hawks and owls. Two screech owls were placed in a cellar in Pennsylvania which was overrun with mice and in a short time they destroyed all the little pests. A sub-cellar in Utica, New York, was used for storing large quantities of barley. The rats got in and destroyed at least eight hundred to a thousand dollars' worth every year. Cats were put in to kill the rats, but when the doors were opened in the morning they rushed out and resisted any attempt to take them back. A large owl was put into this sub-cellar and several perches were set up for it. The morning after the owl was placed in the cellar nine headless rats were found and within the next three months the rats became so scarce that the owl had to be fed on raw meat, and for nearly ten years afterwards practically no damage was done by rats in the cellar. In many parts of the world where hawks and owls have been killed off, field mice have increased and destroyed all the crops, and the only relief from these visitations has been the gathering of hawks and owls during migration, these birds coming from all parts of the country and exterminating the mice. In this and other ways birds help us to protect and save our food supply, but we have not birds enough.

More than a billion dollars a year is lost in this country by insects and small animals. If we can protect and increase the useful birds a large part of this loss may be saved. We should never kill such birds but give them a little extra food and water, and put up bird houses and nesting boxes in which some will bring up their young. If every family living in the country would follow this plan, the number of useful birds might be easily doubled.

WHERE INFORMATION ABOUT TREES AND BIRDS MAY BE OBTAINED

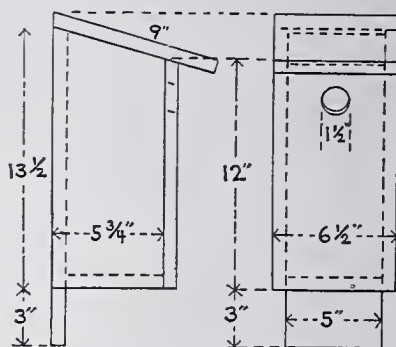
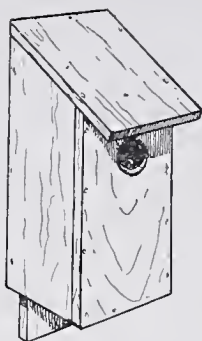
Bulletins pertaining to forestry may be obtained from time to time of the Massachusetts Forestry Association, 4 Joy Street, Boston, Mass. The Association now has a new bulletin on the white pine blister rust.

The State Forester, Room 408, State House, Boston, has bulletins on forestry, tree planting, etc., which are free to citizens of the state. The State Forester can furnish young pine trees for planting.

The Massachusetts Audubon Society, 66 Newbury Street, Boston, is headquarters for all kinds of literature pertaining to birds, bird charts, etc. The National Association of Audubon Societies, 1974 Broadway, New York City, is the society that furnished the cut of the screech owl on the front cover of this leaflet, supplies to teachers and pupils leaflets with colored plates describing native birds and their habits, with uncolored diagrams for the children to color. This Association has organized more than half a million children in Junior Audubon classes for the study of birds, and each teacher leading such a class gets the magazine "Bird-Lore" for a year.

The State Board of Agriculture, Room 136, State House, Boston, publishes leaflets and circulars by the State Ornithologist, telling how to identify, approach and attract birds, how to build bird houses, etc. These leaflets are sent free on application to any citizen of the state.

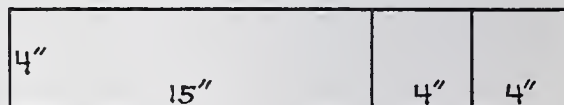
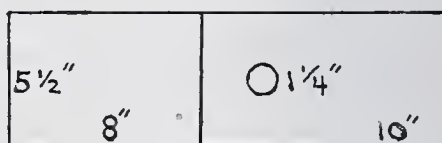
USEFUL NESTING BOXES



Nesting Box for Bluebirds, Tree Swallows or Nuthatches

This box will do for all the common birds that nest in nesting boxes, as it has been used by them all. Diagram shows size inside in inches as follows: Height in front 12 inches, back 13½ inches, bottom 5 x 5 inches; top 7 x 9 inches; entrance hole 1½ inches wide. This box may be put up by nailing the projecting board at the bottom to a pole set in the ground or fastened to a fence post. The box should be from 8 to 10 feet from the ground.

Nesting Box for the Chickadee



The dimensions of all the parts are given in inches on the diagram. This box may be made of boards $\frac{3}{4}$ of an inch in thickness. The top measures $5\frac{1}{2} \times 8$ inches, the front $5\frac{1}{2} \times 10$ inches, the back 4×15 inches, the bottom 4×4 inches. The other 4×4 inch piece is to be fastened with screws or clinch nails across the grain on the under side of the cover. This strip fits inside of the box and prevents warping and splitting of the cover or roof. The sides are $4\frac{3}{4}$ by 10 inches at the front and 12 inches high at the back. This box may be fastened to a tree trunk near the woods or to a post in the shrubbery at a height of from 6 to 10 feet from the ground.